

REMARKS

Claims 1 and 3-11 are pending in the application; each claim stands rejected.

Claims 1, 3, 4, 6, and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barrie et al (US 5,217,085).

Regarding Claim 1, the Examiner states that Barrie discloses a cooling system for a vehicle powertrain having a motor 28 and a transmission 30 including a “cooling loop” in heat conductive contact with a motor stator housing and the transmission. The Examiner states that the cooling loop includes heat exchanger 62 and a mechanical transmission pump 46, an auxiliary pump 52, and a controller, 110. The Examiner admits that Barrie does not disclose a controller commanding auxiliary pump 52 to operate when the processed input of a vehicle sensor exceeds a selected threshold. For this, the Examiner looks to Barrie’s control of valve 106 in response to input from a sensor, citing Barrie at Col. 5, lines 45-60. The Examiner further states that Barrie teaches in the Fig. 1 embodiment a controller 22 controlling a pump 10, 18 based on sensor input 24. Finally, the Examiner argues it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system as shown by Barrie with a controller is also taught by Barrie “since such a modification would provide the advantage of providing higher flow rates of the coolant in order to more efficiently cool the motor and transmission.” Applicants respectfully traverse this rejection and request that Claims 1, 3, 4, 6, and 9 be reconsidered in view of these remarks and passed to issue over the Examiner’s rejection.

Contrary to the Examiner’s assertions, Barrie teachings are not directed toward cooling of the transmission. The Examiner’s attention is hereby directed to Barrie at Col. 1, wherein a parallel flow lubrication and cooling system is described. The avowed intention of Barrie’s system is to avoid cooling the fluid flowing to the transmission:

“The hydraulic system of the present invention includes a lubrication circuit and a cooling circuit in parallel with the lubrication circuit. The parallel arrangement provides uncooled fluid having relatively low viscosity to the lubrication circuit, thereby minimizing losses due to high viscosity oil circulating through a gear box or other mechanical equipment.” (Barrie at Col. 1, lines 50-56, emphasis added)

Barrie’s parallel flow system teaches away from Applicants’ claimed invention because Barrie has two separate flow loops; one is for lubrication of the transmission 30, and the second is cooling for the traction motor 28. Separation is shown abundantly in Barrie’s Figs. 1 and 2. Moreover, although there are common elements to Barrie’s fluid handling system, particularly with the embodiment of Figs. 2 and 3, the fact is that Barrie is seeking not to provide

cooling to the transmission but heating and this fact is shown at Col. 4 of Barrie in lines 1-3, wherein it is stated:

“In operation the system provides a quick warm up of the hydraulic fluid in the circuits due to the parallel disposition of the lubrication and cooling circuits.”

In other words, Barrie seeks to heat the fluid going to the transmission, and not to cool the fluid. Accordingly, Barrie lacks a cooling loop and heat conductive contact with the motor stator and with the transmission.

The Examiner, as noted above, asserts that Barrie includes a mechanical transmission pump, 46. This contention is in error because it is quite clear that Barrie's pump 46 is electrically driven because it is stated as being concentric with pump 52, which is driven by electric motor 54. In other words, both pumps are driven by a common motor. Thus, Barrie lacks the element of a mechanical transmission pump. What does seem clear is that auxiliary pump 52 is used to circulate fluid from Barrie's transmission to reservoir 44, but this pump operates whenever the motor 28 and transmission 30 are operating, because the pump helps to provide the flow of lubricant to transmission 30, and the transmission obviously must be provided with lubricant whenever the powertrain is operating. Accordingly, Barrie does not disclose a controller commanding an auxiliary pump to operate when a vehicle sensor exceeds a pre-selected threshold. Rather Barrie himself states that pump 52 operates continuously, first at a lower speed when the vehicle is started and then at a higher speed (Barrie at Col. 4, lines 34-43).

The Examiner's assertion that it would have been obvious to modify Barrie to accomplish anything remotely resembling Applicants' invention is particularly misplaced because the Examiner has adduced no evidence of any motivation to make such a modification, and such evidence is required, particularly when making a §103 rejection based on a single reference.

In sum, each of Claims 1, 3, 4, 6, and 9 is allowable over the Examiner's rejection and should be passed to issue. Such action is earnestly solicited.

Regarding Claim 3, the Examiner states that Barrie's controller is “obviously a vehicle system controller.” However, the Examiner offers no evidence to support this assertion, and because Claim 3 is dependent upon Claim 1 which is itself allowable over Barrie, Claim 3 should be passed to issue over the Examiner's rejection. Such action is earnestly solicited.

Regarding Claim 4, the Examiner states the Barrier shows bypass conduits and bypass valves having actuators which, the Examiner asserts, are shown in Figs. 2 and 3. The Examiner does not, however, state which structures of Barrie comprise these “bypass conduits and bypass valves.” Moreover, the Examiner admits that Barrie does not teach an auxiliary

pump as being reversible but instead argues that it would have been obvious at the time the invention was made to install a reversible pump. The Examiner states that the motivation to do so is by observation of the valve configuration. The Examiner has adduced no independent evidence to support his contention that it would have been obvious to have driven the pump in reverse and his observation of the valving is insufficient to support this contention. As a result, Claim 4, too should be allowed over the Examiner's rejection. Such action is earnestly solicited.

Regarding Claim 6, the Examiner states "that an old and well known configuration for a powertrain containing a motor and transmission arrangement in a series configuration." However, regardless of the Examiner's contention, Claim 6 depends from Claim 1 which is allowable over Barrie and Claim 6 should be passed to issue over the Examiner's rejection.

Regarding Claim 9, the Examiner states that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the range of maximum temperature for the transmission motor to be no greater than 250 degrees Fahrenheit and 350 degrees Fahrenheit." The Examiner dismisses this limitation with the statement "where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art." Regardless of this contention, Claim 9 depends from Claim 1 which is allowable over Barrie and should be passed to issue over the Examiner's rejection.

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Barrie in view of Prabhu (US 6,670,788).

The Examiner cites Prabhu for the teaching of a hybrid vehicle including an integrated starter/generator (ISG). Claim 5, however, depends from Claim 1 which is allowable over Barrie and, for that matter, allowable over the combination of Barrie and Prabhu, because neither Barrie nor Prabhu, whether taken singly, or in combination with each other, either teach or suggest the limitations of Claim 5, taken in combination with Claim 1, from which Claim 5 depends, as a result Claim 5, too is allowable over the Examiner's rejection and should be passed to issue.

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Barrie in view of Barnhardt (US 4,284,913). The Examiner has cites Barnhardt for the teaching of a cooling system for a vehicle powertrain having a motor and a transmission with an auxiliary pump located on the interior of the transmission. The Examiner states it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system as shown by Barrie with the pump location as taught by Barnhardt. Nevertheless, Applicants respectfully submit that neither Barrie, nor Barnhardt, whether taken singly, or in

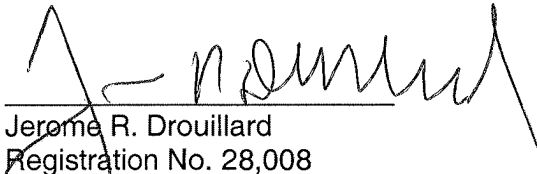
combination with each other, either teach or suggest Applicants' claimed invention, because Barnhardt does nothing to remedy the basic deficiencies observed in connection with the Barrie reference, and as a result, Claim 7, which depends from Claim 1, is allowable over the Examiner's rejection and should be passed to issue. Such action is earnestly solicited.

Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Barrie in view of Harper (US 6,066,060). The Examiner cites Harper for a cooling system for a vehicle including an auxiliary pump and states that it would have been obvious to one having ordinary skill in the art to modify Barrie with an external pump as taught by Harper. Once again, however, neither Barrie nor Harper, whether taken singly, or in combination with each other, either teach or suggest the limitations as set forth in Claim 1, and therefore Claim 8, which depends therefrom is allowable and should be passed to issue over the Examiner's rejection.

Claims 10 and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barrie in view of Tanaka (US 5,43,130). The Examiner cites Tanaka for a transmission and motor configuration in which the stator housing is overlapped by a transmission housing. Once again, however, Applicants respectfully submit neither Barrie nor Tanaka, whether taken singly, or in combination with each other, either teach or suggest Applicants' invention as set forth in Claims 10 and 11 because Tanaka teaches nothing more than a combination of a motor and stator, as set forth by the Examiner, and because Claims 10 and 11 depend from Claim 1, which is allowable over the Examiner's rejection, Claims 10 and 11, too should be passed to issue. Such action is earnestly solicited.

In sum, each of the claims remaining in this case – i.e., Claims 1 and 3-11, is allowable over the Examiner's rejection and should be passed to issue. Such action is earnestly solicited.

Respectfully submitted,


Jerome R. Drouillard
Registration No. 28,008
28333 Telegraph Road, Suite 250
Southfield, MI 48034
(248) 223-9500

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